

licated in a recent report from the Department of the Interior's Bureau of Mines.

According to 1954 figures cited in the report, fossil fuels supplied 94% of the nation's total energy output. Of this, 38% came from petroleum, 29% from natural gas, and 27% from coal.

Some of the power-producing devices envisioned as replacements for depleted fossil fuel reserves will do their work without the familiar steam-driven turbo-generators, still needed for use with atomic reactors.

Thermoelectric generators will convert nuclear energy or solar energy directly into electricity.

Thermionic generators, working from a nuclear heat source, will convert energy

to electrical form by heating conductive material to cause electrons to "escape" to an outside circuit.

Fuel cells will yield electrical energy from chemical reactions. Units capable of developing thousands of watts of power have been demonstrated.

Magnetohydrodynamics, or MHD, sends gases through a magnetic field at high temperatures and high velocities, providing free electrons such as are found in copper in a conventional generator. Scientists at Westinghouse Electric Corporation, Pittsburgh, have built and operated an experimental MHD generator.

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INVENTION

Patents of the Week

► A MANNED BALLOON capsule for studying the upper atmosphere has been patented.

The capsule, one of a series designed for the U. S. Navy's upper atmospheric program, Project Stratolab, was invented by Harold E. Froehlich, New Brighton, and Richard L. Schwoebel, Minneapolis, Minn. Rights of patent No. 2,993,663 were assigned to General Mills, Inc.

"Photographing the atmosphere of other planets in the clear air of the stratosphere and measuring its temperature, ozone content and pressure have been accomplished with these manned balloon junkets," Mr. Froehlich told SCIENCE SERVICE in a telephone interview. In 1956, the first flight in one of these balloons during Project Stratolab lofted Malcolm D. Ross 70,000 feet above the earth, a record height at that time. Since then, a manned balloon flight has topped the 100,000-foot mark.

The compactly built, cylindrical shaped gondola is suspended from a plastic balloon at a 30- to 60-degree angle to provide the smallest possible shell enclosing a man in a sitting position. The flight is controlled by releasing ballast.

The gondola's aluminum-coated nylon "skin" reflects the sun's hot rays during the day, whereas an inside layer of aluminum prevents excessive loss of heat from the pressurized cabin during cold nights. An adjustable seat permits the "space man" to reach the instruments easily or view the upper atmosphere through a porthole.

A method of manufacturing phonograph records that do not collect dust is claimed by three Japanese. Yuzo Miura, Tokyo; Tomomichi Tsukada, Kawasaki-shi; and Shizuo Hayashi, Tsurumi-ku, Yokohama, won patent No. 2,993,234 and assigned the rights to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan. An antistatic agent, such as stearamido-propyldimethyl-beta-hydroxyethyl ammonium nitrate, is added to the plastic resin powder for making record disks, obtaining "ever clear phonograph records," the patent claimed. "The present invention can be applied not only to phonograph records but also to electric fan blades and lighting fixtures with favorable results," the inventors said.

"A new concept in the ground handling

of heavy aircraft," especially jet planes, is claimed in patent No. 2,993,549 by Jerome I. Davis, Bedford, N. Y., John E. Steinback, Stamford, and Raymond J. Enyeart, Westport, Conn. Rights were assigned to Consolidated Diesel Electric Corporation, Stamford. Huge 125-ton jet aircraft can be taxied from a hangar or parking area to a passenger loading gate with "wheel movers." The self-propelled wheel movers are clamped to the landing gear and can actually move the craft at speeds up to five miles an hour. The plane can be turned by propelling one wheel forward while simultaneously reversing the direction of the other wheel. The units can be controlled by the pilot or a ground crewman.

An improved multi-stage flash evaporator for converting salt water to fresh water won for Charles P. Nilan, Rye, N. Y., patent No. 2,993,844. Rights were assigned to Chicago Bridge & Iron Company, Chicago. Sea water flowing through a maze of pipes is continually heated and then vaporized in a series of compartments. The vapor, now fresh water droplets, is then filtered off. The evaporating compartments are arranged to preheat the incoming cold sea water contained in the pipes.

A "hypodermic syringe" for injecting materials such as antiseptics or fireproofing substances into wooden poles or trees was invented by Stanley Henry Reece, Morden, England. Rights of patent No. 2,993,245 were assigned to Cobra (Wood Treatment) Limited, London. Two needles connected to the syringe are driven into the wood after clamping the unit to the tree. As the needles slowly move into the tree, the piston automatically injects the foreign substance at a uniform rate.

A gas-inflated life preserver that does not tend to lose gas or become dangerously brittle after a period of time is claimed by Richard Switlik, Allentown, N. J., in patent No. 2,993,217, assigned to Switlik Parachute Company, Inc., Trenton, N. J. A baffle within the life preserver spreads the gas evenly when inflating so that any cracking will be limited to the baffle and not occur in the outer fabric, the patent stated.


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